BULLETIN OF MECHANICAL ENGINEERING EDUCATION

INDEX

Volume 3

Issue numbers in bold figures, page numbers in light figures

Accelerated Life Test Using a Graeco-Latin-Square Test Plan, H. SCHENCK, 3, 241.

Advanced Mechanics of Materials; H. Ford (Part IV in collaboration with J. M. ALEXANDER), Book Review, P. B. MELLOR, 4, 366.

ANNAND, W. J. D.,

The First Law of Thermodynamics and the Theory of Machines, 1, 49.

Thermodynamics; J. E. LAY, Book Review, 3, 272.

APPL, F. C., Weld, E. L., and Scully, L. W., Plastic Membrane for Torsional Stress, 3, 233.

Applied Mechanics in Modern Design, W. N. FINDLEY, 2, 99.

Applied Thermodynamics for Engineering Technologists; T. D. EASTOP and A. McConkey, Book Review, D. J. RYLEY, 2, 171.

Assessment of Examinations, The, A. Bolton, 4, 329.

Autographic Demonstration Instrument, P. W. TURNER, 1, 47.

Benson, R. S., Heat, Thermodynamics and Statistical Physics; F. H. Crawford, Book Review, 3, 265.

Bio-engineering in the Mechanical Engineering Curriculum, T. B. Davey and B. Kaufman, 3, 181.

BOLTON, A., The Assessment of Examinations, 4, 329.

Breddow, H. and Lipmann, H., A Lecture Model for Introducing Statics, 2, 131.

BROTTON, D. M., Moment Distribution; J. M. GERE, Book Review, 2, 172.

BUTLER, R., Ordinary Differential Equations; L. S. Pontryagin, Book Review, 3, 271.

CARNEGIE, W., Rotary Inertia and Gyroscopic Effects in Overhung Shaft Systems, 3, 191. CHANDLER, D. C. and GREGORY, G. M. W., An Experimental Investigation into the Stress Distribution in Thick Cylinders, 1, 43.

CLAUSEN, J. N., SPRINGER, R. D. and PALMER, L. G., The Effect of Open Laboratory, Scheduled Laboratory and Visual Aids on Scholastic Attainment in Engineering

Graphics Courses, 3, 247.

Comment: Other Thoughts on the Spinning Ball Experiment, J. K. ROYLE, 1, 13.

Compiling and Disseminating Research Information, J, SANDOVER, 4, 313.

Compressible Flow in a Constant-Area Duct, T. B. FERGUSON, 1, 57.

Cox, H. L., Dynamic Stresses in Gun Springs, 1, 35.

DAVEY, T. B. and KAUFMAN, B., Bio-Engineering in the Mechanical Engineering Curriculum, 3, 181.

DAVIES, T. H., Graphical Aids to the Understanding of Steady-State Mechanical Vibrations,

DENT, J. C., A Liebmann Network Analogue for Heat Transfer Laboratory Work, 4, 295.

Applied Mechanics in Modern Design, W. N. FINDLEY, 2, 99.

Design of a Cantilever Spring with a Prescribed Non-linear Force Deflexion Characteristic,

The, T. C. FIRBANK and J. STEPHENSON, 3, 201.

Report on a Promising Technique for Teaching Mechanical Design, A; B. J. Pelan, 4, 359.

Swinging Thermometer: Experience with a Design Project, A, P. D. RICHARDSON, 3, 185.

Teaching of Aircraft Design, The, A. F. Newell and D. Howe, 4, 349.

Digital Computer, A Problem Suitable for Introducing the Use of a, to Undergraduates,

N. JONES, 2, 135.

Discussion of Elementary Dynamics, A, S. A. V. SWANSON, 1, 79. Discussion of Elementary Dynamics, A, Letter, R. R. PLATT, 2, 169.

Dynamic Stresses in Gun Springs, H. L. Cox, 1, 35.

Dynamics,

Discussion of Elementary—, A, Letter, R. R. PLATT, 2, 169.

Discussion of Elementary—, A, S. A. V. Swanson, 1, 79. Report on "The Role of Rigid Body—in an Undergraduate Engineering Course", **B.** J. FIELDING, 2, 123.

Effect of Open Laboratory, Scheduled Laboratory and Visual Aids on Scholastic Attainment in Engineering Graphics Courses, The, J. N. CLAUSEN, R. D. SPRINGER and L. G. PALMER, 3, 247.

Elements of Compressible Flow, F. CHEERS; Book Review, T. B. FERGUSON, 4, 367.

ELLIOT, J. A., ROBERTS, A. W. and LUXTON, R. E., Noise Analysis of a Laboratory Gas

Engineering Heat Transfer; S. T. Hsu, Book Review, A. P. HATTON, 1, 83.

Examinations,

The Assessment of—, A. Bolton, 4, 329.

Experimental Determination of the Lift and Drag of a Spinning Ball, R. Thomson, 1, 9. Experimental Investigation into the Stress Distribution in Thick Cylinders, An, D. C. CHANDLER and G. M. W. GREGORY, 1, 43.

Experimental Method.

On Teaching—, W. G. Wood, 4, 337.

Experimental Stress Analysis,

Experimental Investigation into the Stress Distribution in Thick Cylinders, D. C. CHANDLER and G. M. W. GREGORY, 1, 43.

Plastic Membrane for Torsional Stress, F. C. APPL, E. L. WOOD and L. W. SCULLY, 3,

Fatigue of Metals; P. G. FORREST, Book Review, J. H. LAMBLE, 2, 174.

FERGUSON, T. B.,

Compressible Flow in a Constant-Area Duct, 1, 57.

Elements of Compressible Flow; F. CHEERS, Book Review, 4, 367.

Method for Locating the Position of a Normal Shock in a Converging-Diverging Nozzle, A Letter, 4, 364.

FIELDING, B. J., Report on "The Role of Rigid Body Dynamics in an Undergraduate Engineering Course", 2, 123.

FINDLEY, W. N., Applied Mechanics in Modern Design, 2, 99.

FIRBANK, T. C. and STEPHENSON, J., The Design of a Cantilever Spring with a Prescribed Nonlinear Force Deflexion Characteristic, 3, 201.

First Law of Thermodynamics and the Theory of Machines, The, W. J. D. Annand, 1, 49. Fluid Mechanics.

Compressible Flow in a Constant-Area Duct, T. B. Ferguson, 1, 57.

Force and Rate of Change of Momentum—A Fluids Experiments, G. PALLET, 4, 309.

Hydraulic Analogy to the Flow of a Perfect Gas, J. W. J. WIELOGORSKI, 4, 305.

Method for Locating the Position of a Normal Shock in a Converging-Diverging Nozzle, A; J. A. SULLIVAN and A. G. HANSEN, 2, 119.

ibid, Letter, T. B. FERGUSON, 4, 364.

Towing of Small Ship Models, D. H. NORRIE, 1, 1.

ibid, Letter, J. R. D. Francis, 4, 363.

Force and Rate of Change of Momentum—A Fluids Experiment, G. PALLET, 4, 309.

Francis, J. R. D., The Towing of Small Ship Models, Letter, 4, 363.

FROST, W. J., Impact Apparatus, 3, 231.

Fundamentals of Heat Transfer; S. S. KUTATELADZE, Book Review, A. P. HATTON, 3, 271.

Graphical Aids to the Understanding of Steady-State Mechanical Vibrations, T. H. DAVIES, 1, 25.

Graphical Method for Determining Transient Response, A. D. McCloy, 1, 15. Graphical Methods Applied to Vibrations Problems, Letter, C. H. HELMER, 4, 363. Graphics with an Introduction to Conceptual Design; A. S. Levens, Book Review, J. Kettlewell, 3, 269.

GREGORY, G. M. W. and CHANDLER, D. C., An Experimental Investigation into the Stress Distribution in Thick Cylinders, 1, 43.

HANSEN, A. G. and SULLIVAN, J. A., A Method for Locating the Position of a Normal Shock in a Converging-Diverging Nozzle, 2, 119.

HATTON, A. P.,

Engineering Heat Transfer; S. T. Hsu, Book Review, 1, 83.

Fundamentals of Heat Transfer; S. S. KUTATELADZE, Book Review, 3, 271.

Heat, Thermodynamics and Statistical Physics; F. H. CRAWFORD, Book Review, R. S. Benson, 3, 265.

Heat Transfer,

Liebmann Network Analogue for Heat Transfer Laboratory Work, A, J. C. Dent, 4, 295. Note on—and the Thermodynamics of Irreversible Processes, A, P. D. RICHARDSON, 4, 287.

Numerical Method for Unsteady One-Dimensional Conduction, Y. R. MAYHEW, 1, 63. HELDSON, R. M., The Zeroth Law of Thermodynamics, 4, 293.

HELMER, C. H., Graphical Methods Applied to Vibrations Problems, Letter, 4, 363. HICKSON, D. C., The Ideal Internal Combustion Engine Cycle, 4, 276.

HICKSON, D. C., The Ideal Internal Combustion Engine Cycle, 4, 276. HILLIER, M. J., Virtual Work: Inertia and Mechanism Analysis, 1, 33.

Howe, D. and Newell, A. F., The Teaching of Aircraft Design, 4, 349.

Hydraulic Analogy to the Flow of Perfect Gas, The, J. W. J. WIELOGORSKI, 4, 305.

Ideal Internal Combustion Engine Cycle, The, D. C. HICKSON, 4, 276.

Impact Apparatus, W. J. Frost, 3, 231.

Introduction and Application of Statistics in Engineering Laboratory Courses, The, C. C. Perry, 1, 75.

Introduction to the Mechanics of Deformable Bodies, An; M. STIPPES, G. WEMPNER, M. STERN and R. BECKETT, Book Review, P. B. MELLOR, 3, 273.

Introduction to Noise Control in the Mechanical Engineering Course, J. Skorecki, 3, 223.

JENKINS, R. B. M., The Mechanics of a Railway Wagon on a Curved Track, 3, 217.

JOHNSTON, A. K., Unit Analysis, 2, 155.

Jones, N., A Problem Suitable for Introducing the Use of a Digital Computer to Undergraduates, 2, 135.

KAUFMAN, B. and DAVEY, T. B., Bio-engineering in the Mechanical Engineering Curriculum, 3, 181.

Kettlewell, J., Graphics with an Introduction to Conceptual Design; A. S. Levens, Book Review, 3, 269.

LAMBLE, J. H.,

Fatigue of Metals; P. G. Forrest, Book Review, 2, 174.

Symposium on Photoelasticity; Ed. M. M. FROCHT; Book Review, 2, 173.

Lecture Model for Introducing Statics, A, H. H. Bredow and H. Lippmann, 2, 131. Liebmann Network Analogue for Heat Transfer Laboratory Work, A, J. C. Dent, 4, 295. Lippmann, H. and Bredow, H., A Lecture Model for Introducing Statics, 2, 131.

Literature.

Compiling and Disseminating Research Information, J. SANDOVER, 4, 313.

—Searching, P. D. Soden, 4, 319.

Luxton, R. E., Roberts, A. W. and Elliot, J. A., Noise Analysis of a Laboratory Gas Turbine, 2, 87.

McCloy, D., A Graphical Method for Determining Transient Response, 1, 15. Manufacturing Processes, 5th Ed.; M. L. Begeman and B. H. Amstead, Book Review, R. H. Thornley, 2, 172.

Manufacturing Properties of Materials; J. M. ALEXANDER and R. C. Brewer, Book Review, P.B. Mellor, 4, 365.

Materials Testing,

Applied Mechanics in Modern Design, W. N. FINDLEY, 2, 99.

Matrix Tensor Methods in Continuum Mechanics; S. F. Borg, Book Note, 2, 176. Mayhew, Y. R., Numerical Method for Unsteady One-Dimension Conduction, 1, 63.

Mechanics of a Railway Wagon on a Curved Track, R. B. M. JENKINS, 3, 217.

MELLOR, P. B.,

Advanced Mechanics of Materials; H. Ford (Part IV in collaboration with J. M. ALEXANDER), Book Review, 4, 366.

Introduction to the Mechanics of Deformable Bodies, An; M. STIPPES, G. WEMPNER, M. STERN and R. BECKETT, Book Review, 3, 273.

Manufacturing Properties of Materials; J. M. ALEXANDER and R. C. Brewer, Book Review, 4. 365.

Method for Locating the Position of a Normal Shock in a Coverging-Diverging Nozzle, A, J. A. SULLIVAN and A. G. HANSEN, 2, 119.

ibid, Letter, T. B. FERGUSON, 4, 363.

Moment Distribution; J. M. GERE, Book Review, D. M. BROTTON, 2, 172.

Nelson, F. C., A Theorem Concerning Quasistatic Processes in Thermodynamics, Letter, 3, 263.

Newell, A. F. and Howe, D., The Teaching of Aircraft Design, 4, 349. Noise.

Introduction to—Control in the Mechanical Engineering Course, J. SKORECKI, 3, 223.
—Analysis of a Laboratory Gas Turbine, A. W. ROBERTS, J. A. ELLIOT, R. E. LUXTON, 2, 87.

NORRIE, D. H., The Towing of Small Ship Models, 1, 1.

Note on Heat Transfer and the Thermodynamics of Irreversible Processes, A, P. D. RICHARDson, 4, 287.

Note on Students' Difficulties with Units in Mechanical Engineering, A. C. Walshaw, 2, 165.

Numerical Method for Unsteady One Dimension Conduction, Y. R. MAYHEW, 1, 63.

Ordinary Differential Equations; L. S. Pontryagin, Book Review, R. Butler, 3, 271.

PALLETT, G.,

Force and Rate of Change of Momentum—A Fluids Experiment, 4, 309. Relaxation Methods for Two-Dimensional Field Problems, 2, 147.

PALMER, L. G., CLAUSEN, J. N. and SPRINGER, R. D., The Effect of Open Laboratory, Scheduled Laboratory and Visual Aids on Scholastic Attainment in Engineering Graphics Courses, 3, 247.

Pelan, B. J., A Report on a Promising Technique for Teaching Mechanical Design, 4, 359. Perry, C. C., The Introduction and Application of Statistics in Engineering, Laboratory Courses, 1, 75.

Petrol Engine Mixture Strength Test, D. J. WHITE, 4, 283.

Photoelasticity,

Symposium on—; Ed. M. M. Frocht, Book Review, J. H. LAMBLE, 2, 173.

Plastic Membrane for Torsional Stress, F. C. APPL, E. L. WELD and L. W. SCULLY, 3, 233. PLATT, R., A Discussion of Elementary Dynamics, Letter, 2, 169.

Practical Geometry and Engineering Graphics, 7th Ed.; W. Abbott, Book Review, G. R.

SCHIFFER, 3, 269.

Problem Suitable for Introducing the Use of a Digital Computer to Undergraduates, N.

Jones, 2, 135.

Relaxation Method for Two-Dimensional Field Problems, G. Pallett, 2, 147.
Report on a Promising Technique for Teaching Mechanical Design, A, B. J. Pelan, 4, 359.
Report on "The Role of Rigid Body Dynamics in an Undergraduate Engineering Course", B. J. Fielding, 2, 123.

RICHARDSON, P. D.,

A Note on Heat Transfer and the Thermodynamics of Irreversible Processes, 4, 287.

A Swinging Thermometer; Experience with a Design Project, 3, 185.

ROBERTS, A. W., ELLIOTT, J. A. and R. E. LUXTON, Noise Analysis of a Laboratory Gas Turbine, 2, 87.

Rotary Inertia and Gyroscopic Effects in Overhung Shaft Systems, W. CARNEGIE, 3, 191.

ROYLE, J. K., Comment: Other Thoughts on the Spinning Ball Experiment, 1, 13.

RYLEY, D. J.,

Applied Thermodynamics for Engineering Technologists; T. D. EASTOP and A. McConkey, Book Review, 2, 171,

Thermodynamics for Engineers; A. C. Walshaw, Book Review, 2, 171.

SANDOVER, J., Compiling and Disseminating Research Information, 4, 313.

SCHENCK, H., An Accelerated Life Test Using a Graeco-Latin-Square Test Plan, 3, 241. SCHIFFER, G. R., Practical Geometry and Engineering Graphics, 7th Ed.; W. Abbott, Book Review, 3, 269.

SCULLY, L. W., APPL, F. C. and WOOD, E. L. Plastic Membrane for Torsional Stress, 3,

SKORECKI, J.,

Introduction to Noise Control in the Mechanical Engineering Course, 3, 223.

Introductory Mechanics; E. F. TAYLOR, Book Review, 3, 270. Vector Mechanics for Engineers, H. R. NARA; Book Review, 3, 270.

SODEN, P. D., Literature Searching, 4, 319.

SPRINGER, R. D., CLAUSEN, J. N. and PALMER, L. G., The Effect of Open Laboratory, Scheduled Laboratory and Visual Aids on Scholastic Attainment in Engineering Graphics Courses, 3, 247.

Statics.

A Lecture Model for Introducing—, H. Bredow and H. LIPPMANN, 2, 131.

Statistics,

An Accelerated Life Test Using a Graeco-Latin-Square Test Plan, H. SCHENCK, 3, 241. The Introduction and Application of—in Engineering Laboratory Courses, C. C. PERRY,

STEPHENSON, J. and FIRBANK, T. C., The Design of a Cantilever Spring with a Prescribed Non-linear Force Deflexion Characteristic, 3, 201.

SULLIVAN, J. A. and HANSEN, A. G., A Method for Locating the Position of a Normal Shock in a Converging-Diverging Nozzle, 2, 119.

Swanson, S. A. V., A Discussion of Elementary Dynamics, 1, 79.

SWIFT, W. A. C., The Use of an Elliptical Pendulum to Demonstrate Non-linear Vibrations, 3, 207.

Swinging Thermometer: Experience with a Design Project, A, P. D. RICHARDSON, 3, 185. Symposium on Photoelasticity; Ed. M. M. FROCHT, Book Review, J. H. LAMBLE, 2, 173.

Teaching of Aircraft Design, The, A. F. Newell and D. Howe, 4, 349.

Teaching Experimental Method, On, W. G. Wood, 4, 337.

Theorem Concerning Quasistatic Processes in Thermodynamics, Letter, F. C. Nelson, 3, 263.

Theory of Machines,

The First Law of Thermodynamics and the—, W. J. D. Annand, 1, 49.

Thermodynamics,

-, J. E. LAY; Book Review, W. J. D. Annand, 3, 272.

First Law of-and the Theory of Machines, The, W. J. D. Annand, 1, 49. Ideal Internal Combustion Engine Cycle, The, D. C. HICKSON, 4, 276.

Theorem Concerning Quasistatic Processes in—, Letter, F. C. Nelson, 3, 263.

Zeroth Law of-, The, R. M. HELDSON, 4, 293.

THORNLEY, R. H., Manufacturing Processes, 5th Ed.; B. H. AMSTEAD and M. L. BEGEMAN, Book Review, 2, 172.

THOMSON, R., Experimental Determination of the Lift and Drag of a Spinning Ball, 1, 9.

Towing of Small Ship Models, The, D. H. NORRIE, 1, 1. *ibid*, Letter, J. R. D. Francis, 4, 363. Turner, P. W., Autographic Demonstration Instrument, 1, 47.

Units.

Note on Students' Difficulties with—in Mechanical Engineering, A. C. WALSHAW, 2, 165. Unit Analysis, A. K. JOHNSTON, 2, 155.

Use of an Elliptical Pendulum to Demonstrate non-linear Vibrations, W. A. C. SWIFT, 3, 207.

Vector Mechanics for Engineers, H. R. NARA; Book Review, J. SKORECKI, 3, 270. Vibrations,

Design of a Cantilever Spring with a Prescribed non-linear Force Deflexion Characteristic, T. C. FIRBANK and J. STEPHENSON, 3, 201.

Graphical Aids to the Understanding of Steady-State Mechanical—, T. H. DAVIES, 1, 25. Graphical Method for Determining Transient Response, A, D. McCloy, 1, 15.

Graphical Methods Applied to—Problems, Letter, C. H. Helmer, 4, 363.

Rotary Inertia and Gyroscopic Effects in Overhung Shaft Systems, W. Carnegie, 3, 191. Use of an Elliptical Pendulum to Demonstrate Non-linear—, W. A. C. Swift, 3, 207. Virtual Work: Inertia and Mechanism Analysis, M. J. HILLIER, 1, 33.

Walshaw, A. C., Note on Students' Difficulties with Units in Mechanical Engineering, 2, 165.

WELD, E. L., APPL, F. C. and Scully, L. W., Plastic Membrane for Torsional Stress, 3, 233. WHITE, D. J., Petrol Engine Mixture Strength Test, 4, 283.

WIELOGORSKI, J. W. J., The Hydraulic Analogy to the Flow of Perfect Gas, 4, 305. WOOD, W. G., On Teaching Experimental Method, 4, 337.

Zeroth Law of Thermodynamics, R. M. HELSDON, 4, 293.

BULLETIN OF MECHANICAL ENGINEERING EDUCATION

Aims and Scope

- (a) For the publication of articles about new experimental methods and new experimental demonstrations which are of fundamental value to Mechanical Engineering students at less than graduate level.
 - (b) To discuss the construction of apparatus for specific tests and demonstrations of value in education.
- (c) To carry discussions concerning teaching methods and aids—e.g. the use of films and models—and to advertise the coming of new ones as these become available.
- (d) To discuss what new subjects can, or should be, introduced into mechanical engineering syllabuses, with suggestions as to methods of approach, giving sources of material for use in the preparation of lectures.
- (e) To review books, primarily with use by students in view, and to draw attention to particular papers which will have a value in the education of all engineers.

Notes to Contributors

- 1. The Editors will be pleased to receive contributions from all parts of the world on matters coming within the purposes of the *Bulletin*. Manuscripts for publication should be addressed to them at the Manchester College of Science and Technology.
- 2. Only articles not previously published will be accepted and authors must agree not to publish elsewhere an article submitted to and accepted for the *Bulletin*.
 - 3. Letters to the Editor may include:
 - (a) Criticisms of articles recently published in the Bulletin.
 - (b) Comments on current Engineering Educational matters of academic and technical interest.
 - 4. All contributions must be in English, the Editors at their discretion will modify style should this be necessary.
- 5. Manuscripts should be typed with double spacing, with ample margins and submitted in duplicate. Pages should be numbered consecutively.
- 6. The title of the article, the author's name and the address from which the article comes should appear at the head of the article. In the case of joint authors, it must be made clear to which of them correspondence and proofs are to be forwarded.
 - 7. The essential contents of each article should be recapitulated in a brief summary.
- 8. Drawings, etc., should be in ink, about twice the final size required with the lettering clear, "open" and sufficiently large to permit the necessary reduction of size in block-making. Line drawings should include all relevant detail. Dye-line prints should not be sent.
- Half-tone illustrations are to be restricted to the minimum necessary, they should accompany the script but must not be included on manuscript pages. Photographs should be enlarged sufficiently to permit clear reproduction, and if words or numbers are to appear on a photograph, two prints should be sent, the lettering being indicated clearly on one print only.
- 9. References in the text to published literature should be given by numbers in square brackets on the line and these references should be listed together at the end of the article in the order in which they occur in the text. *Double spacing must be used throughout*.
 - Journal references should be arranged thus:
- [1] J. F. Dooley and S. S. Gill, B.M.E.E. 2, 41 (1963).
 - Book references to be given as follows:
- [2] J. H. LAMBLE, Principles and Practice of Non-destructive Testing, p. 41, Heywood, London (1962).
- 10. Nomenclature should conform to that most frequently used in the engineering field concerned and, in particular, reference should be made to B.S.1991: Part 4: 1960 for units and abbreviations.
 - 11. All Greek letters and unusual symbols should be identified by name, in the margin, the first time they are used.
 - 12. Tables should be numbered consecutively and should not repeat data available elsewhere in the article.
 - 13. Captions for figures should be typed on a separate sheet and placed at the end of the manuscript.
- 14. No manuscripts or illustrations accepted for publication will be returned unless a specific request for this to be done is received with the manuscripts.
- 15. Twenty-five reprints of each article will be sent to the *author* free of charge. Additional copies can be purchased if specified on the reprint order form which will accompany proofs. *Reviewers* will receive one copy of their reviews. *Publishers* will receive two copies of the review.
 - 16. The Bulletin will be published quarterly.





